CITY OF KIRKLAND
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DEPARTMENT OF PUBLIC WORKS
PRE-APPROVED PLANS POLICY

Policy L-2: FEASIBILITY OF STORMWATER LOW IMPACT DEVELOPMENT (LID) FOR FULL DRAINAGE REVIEW[1] PROJECTS

Applicants for projects meeting the threshold for full drainage review must evaluate the Feasibility and Applicability of dispersion, infiltration, and other stormwater LID options. All stormwater LID BMPs must be designed and installed according to the 2009 King County Surface Water Design Manual (KCSWDM), COK Addendum, and the PW Pre-Approved Plans. Listed below are the Stormwater LID BMP options from the 2009 KCSWDM (listed in order of preference):

- Dispersion (Full or Basic)
- Infiltration (Full or Basic)
- Limited Infiltration
- Rain Garden
- Permeable Pavement
- Rainwater Harvesting
- Vegetated Roof
- Reduced Impervious Surface Credit
  The reduction in impervious surface area below maximum lot coverage must be assured through recorded covenant and/or alternative design of impervious surface area. Reduction techniques include: restricted footprint, wheel strip driveways, minimum disturbance foundation, and open grid decking over pervious surface.
- Native Growth Retention Credit
  Credit for preserving native growth at the rate of 1 sq ft impervious requires 3.5 sq ft of native vegetated surface – in other words, for every 3.5 sq ft of native vegetation area preserved, 1 sq ft of target impervious surface may be credited as mitigated.

EVALUATION

Evaluate the feasibility of Dispersion BMPs:

- **Full Dispersion** is feasible if the proposed project has 50-100 feet of native vegetated flowpath (depending on the dispersion method) to disperse the runoff from the new and/or replaced impervious surface area. A SW Adjustment Form (Policy D-11) may be necessary if less than 100ft flowpath, with approval on a case-by-case basis.
- **Basic Dispersion** is feasible if the project has 25-50 feet of vegetated flowpath (does not have to be native vegetation) to disperse the runoff. Other constraints affecting feasibility are steep slopes (greater than 15%), sensitive areas, and the potential to cause or aggravate flooding or erosion problems to neighboring problems. If dispersion is feasible, use the design criteria for dispersion BMPs in the flow control section of Chapter 5 in the 2009 KCSWDM.

If Dispersion BMPs are not feasible, **evaluate the feasibility of Infiltration BMPs**. Potential constraints to consider are soil type, ground water level, and steep slopes (15% or greater). If possible, infiltration facilities should be designed with an overflow connection to the public storm drainage system. Use the design criteria for infiltration BMPs in the flow control section of Chapter 5 in the 2009 KCSWDM.

[1] Full Drainage Review refers to projects creating 5,000ft^2 or more new impervious surface area (not replaced). See policy D-3 for full definition.

If the BMPs involving dispersion or infiltration are not feasible, then **evaluate the feasibility of the other LID BMPs** (rainwater harvesting, vegetated roof, reduced impervious surface credit, and native growth retention credit).

SOIL REPORT

A Soil Report is required for infiltration facilities, bioretention facilities, and pervious pavement for projects triggering a full drainage review. A Soil Report includes (2009 KCSWDM Sec 5.4, page 5-57):

1. At least two soil logs for each proposed infiltration location
    - Borings shall extend at least 5 feet below the bottom of the LID facility
    - A description of the soil series and the textural class of each horizon through the depth of the log, and
    - Notes of any evidence of a high groundwater table, such as mottling.
2. Level of maximum wet-season water table
3. Measured infiltration rates and a recommended design infiltration rate. Three infiltration tests per proposed infiltration facility, except for drywells that only require one test.
4. Soil reports must be prepared by or under the direction of a licensed onsite sewage system designer, civil engineer, engineering geologist, or geotechnical engineer.

BMP AREA REQUIREMENTS

The minimum amount of impervious area routed to the storm LID BMPs varies based on the amount of impervious coverage in the developed condition:

1. For a lot up to 11,000sf, route runoff from an impervious surface area equal to at least **10% of the lot** to one or more storm LID BMPs.
2. For a lot between 11,000 and 22,000sf, route runoff from an impervious surface area equal to at least **20% of the lot** to one or more storm LID BMPs. If total impervious area is less than 20% of the lot, route all impervious area to one or more LID BMPs.
3. For a lot larger than 22,000sf, the amount depends on the % impervious surface coverage of the site/lot:
    - For projects with 45% to 65% impervious coverage in the developed condition, route runoff from at least **20% of the lot** area or 40% of the target impervious surface area (whichever is less) to one or more storm LID BMPs.
    - For projects with more than 65% impervious coverage in the developed condition, route runoff from at least **10% of the lot** area or 20% of the target impervious surface area (whichever is less) to one or more storm LID BMPs.

ADDITIONAL INFORMATION

Regardless of stormwater LID feasibility, the applicant must meet all flow control and water quality treatment requirements applicable to the project. LID BMPs can be counted towards those requirements, but flow control BMPs (LID or other) must be applied for all new and replaced impervious areas.

City policy is to require the installation of stormwater LID to the maximum extent feasible. The City acknowledges stormwater LID may not work on some sites, due to topography, soil, or other site specific conditions. If the evaluation indicates standard LID options are not feasible, please contact City surface water staff at (425) 587-3800 to discuss site specifics. Policy D-11 contains a Stormwater Adjustment Form that must be completed if standard storm LID BMPs are not feasible. If standard LID options are not feasible, at a minimum amended soil will be required in all landscaped areas and/or additional landscape/trees as appropriate.